

## LETTERS TO THE EDITOR

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[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

## A Glimpse through the Corridors of Time

IN a letter which appeared in last week's NATURE (p. 217), Dr. Dupré refers to a "too much forgotten paper by Immanuel Kant," and speaks of Kant's contributions to natural science as being, at present, "almost universally overlooked."

Whatever may be the case elsewhere, I do not think that, in England, we are open to this reproach, inasmuch as in the year 1869, when I had the honour to be President of the Geological Society, a very considerable portion of my anniversary address "On Geological Reform" was devoted to an attempt to do justice to Kant's work, and to indicate the high place which it occupies in the history of scientific geology. The address is reprinted in my "Lay Sermons," and therefore I have reason to know that a considerable proportion of the reading, or at any rate book-buying, public has no excuse for "overlooking Kant's work."

I may remark, in passing, that, so far as my knowledge extends, the extreme "Uniformitarianism" which Prof. Ball attacks, has long been as much "a creed outworn" as "Plutonism" or "Neptunism." Indeed, I said as much in 1869.

T. H. HUXLEY

Normal School of Science and Royal School of Mines,  
South Kensington, January 8

## Outburst of Sun-Spots, July 25, 1881

My letter of August 5, 1881, which appeared in NATURE, vol. xxiv. p. 508, stated that a considerable group of sun-spots burst into appearance between 4 and 5 p.m. (about) on July 25, 1881; or more exactly that the new group was absent at 3h. 58m. (i.e. in negative No. 1175), but was present at 4h. 47m. (i.e. in negative 1176), local apparent time; further, that no additional negatives could be taken here until July 30, when the spots had disappeared.

This communication has elicited obliging notices by other observers, including Prof. Piazzi Smyth and Prof. Perry, F.R.S., in NATURE, besides others posted to me direct. The observers were not able to observe the sun when the outburst occurred, nor for some twenty-two hours afterwards; none of the observers saw the new group.

One of the observers remarks: "I fancy your sudden group of spots is after all a curious system of blemishes in the negative!" Certainly the appearance of the negative (No. 1176) did not (to me) admit of conjectures suggesting the *unreality* of the spots. However, in presence of the remark now offered, I made inquiries of the photographer, Mr. L. H. Clarke, as to the circumstances connected with his detection of the outburst. I inclose his narrative (see below). It establishes the fact that he *first* saw the new spot-group on the ground-glass slide used for focussing the photoheliograph, and indeed that it was *this view* of the unexpected event which urged him to persevere (notwithstanding the clouded state of the sky) in securing a negative, i.e. No. 1176, on which the new spot-group he had seen on the ground glass slide stands photographed. His narrative further establishes narrower limits of time in which the outburst occurred, i.e. between 3h. 58m. to about 4h. 35m., instead of to 4h. 47m. p.m.

I communicate the foregoing facts, as they are essential circumstances of the event, and should be placed on record.

J. B. N. HENNESSEY

Dehra Doon, N. W. Provinces, India, December 16, 1881

On July 25, 1881, the sun was quite invisible owing to clouds, until towards 4 p.m., when a temporary break occurred, and I took negative No. 1175 at 3h. 58m. p.m. After this the sun

again became invisible, while the rising clouds were so dense as to present little hope of getting another negative; so, as evening was approaching I was thinking of closing work for the day, when, while I was still watching at the instrument, an unexpected opening occurred in the rising clouds below the sun, and, soon after, the sun's image appeared on the ground glass used for focussing. To my surprise I now saw, at about 4h. 35m. p.m., a large group of spots about the sun's centre, which were quite absent in the previous negative, No. 1175; little expecting anything of the kind, or indeed to see the sun at all that evening, I was not ready to expose a plate, but now seeing what had happened, I determined to persevere, though the clouds were very unpromising of another break. So I at once took points on my blue setting glass, as is usual to set the instrument by (so as to avoid needless hiding of spots behind the wires), and having done this, I prepared a plate as quickly as possible, and set the exposing slide all ready, though the sun now was invisible; fortunately another opening occurred at 4h. 47m. p.m., when I took negative number 1176, in which appears the group of new spots about the sun's centre, which new group I saw without doubt at about 4h. 35m. on the ground glass for focussing. I then continued to watch for another negative until 5h. 30m. p.m., when the sky having become quite dark, I gave up work for the day.

L. H. CLARKE.

December 2

Polymorphism of the Flower-heads of *Centaurea Jacea*

In *Centaurea Jacea*, the flower-heads of the same stem, as far as I have seen, are always of the same form, but different stems of the same locality often present astonishing difference in their flower-heads.

In the most common and apparently original form the flower-heads consist of florets which are all of the same tubular shape and all contain both fully developed anthers and stigma, the divergence of the outer florets giving to the whole head a diameter of 20–30 mm. (see H. Müller, "Bie Befruchtung der Blumen," p. 382–384). From this original form variation has gone on in two opposite directions, the final effects of this variation being on the one side most conspicuous male flower-heads of 50–55 mm. diameter, and on the other side less conspicuous female flower-heads of 30–35 mm. diameter. In both these extreme forms the outer row of florets possesses greatly enlarged radiating corollas which are sexually functionless, but useful in making the flower-mass more conspicuous. In the male flower-heads anthers and pistils of the disk-flowers are well-developed, but the style-branched never open so as to expose their stigmatic surfaces, and in their basal portion are grown together. In the female flower-heads, on the contrary, only the pistil of the disk-flowers is fully developed, the anthers being pollenless, shrivelled, and brownish-coloured.

These two extreme forms are linked with the original one by a continuous series of gradations. When in the original form variation begins in the one direction, the outer row of florets gradually becomes longer and more radiating, and in the same degree their sexual organs diminish in size and become functionless, the anthers first aborting, and then the pistil. Finally, the barren ray-florets continuing to increase, the pistils of the disk-florets, too, become functionless, and the conspicuous male flower-head is accomplished.

In the contrary variation some of the outer florets of the original form begin to diminish in size, while their anthers become brownish and pollenless, and this change step by step proceeds inwards and seizes a greater and greater number of disk-florets, until the whole flower-head is female, and reduced to a diameter of 15–18 mm. This state being reached, the corollas of the marginal flowers recommence to increase and become radiating, while in the same time their anthers disappear without leaving any trace, and their style-branched remain closing together.

These are, shortly sketched, the main varieties of *Centaurea Jacea*, near Lippstadt. Further details are about to be published in one of the next numbers of *Kosmos*.

Lippstadt

HERMANN MÜLLER

## The Weather

THIS morning I noticed the first blossoms of the Coltfoot (*Tussilago farfara*), ordinarily considered an indication of the near approach of spring. For many years a generous rivalry has existed between myself and a friend (both travellers on the

North Kent Railway, on the banks of which the plant is excessively abundant) as to which could record the first blossoms. I think I have seen them as early as the first week in February; on the other hand, it is possible that the first week in April is on record as the earliest appearance; almost without exception it truly indicated that any long period of severe weather was over for that winter. Will this prove the case with the so-called "winter" of 1881-1882?

Lewisham, January 6

R. McLACHLAN

**INDIAN FOSSILS.**—Dr. Gordon, of the Manse, Birnie, Elgin, writes that there is a pretty large collection of Siwalik fossils in the Falconer Museum at Forres, N.B.

#### THE TRANSIT OF VENUS IN 1882

THE French Ministry of Public Instruction has issued the *Procès-verbaux* of the International Conference on the approaching Transit of Venus, held at Paris from the 5th to the 13th of October last. Representatives of fourteen nationalities were present at the Conference, but regret was expressed that the United States had no delegate present Russia; also was unrepresented, but it has been understood that the Government of that country do not propose to organise expeditions beyond the limits of the Empire, or perhaps to undertake observations elsewhere than at the fixed observatories. M. Jules Ferry, then Minister of Public Instruction and the Fine Arts, was present at the opening meeting of the Conference on October 5, and stated its objects; he was named honorary president by acclamation, and on his proposition the meeting proceeded to the election of the acting-officers, which resulted in the choice of M. Dumas, perpetual secretary of the Academy of Sciences of Paris, as president; Prof. Fœrster, director of the Observatory of Berlin, and Prof. Weiss, director of the Observatory of Vienna, as vice-presidents; with M. Hirsch, of the Observatory of Neuchâtel, delegate from the Swiss Republic, and M. Tisserand, the proposed chief of a French expedition to Martinique, as secretaries. M. Dumas pointed out that the expeditions in 1874 were organised by the various nations without any general previous understanding, each acting independently, adding that the necessity of co-operation in the arrangements of different countries for the observation of the approaching phenomenon is now generally admitted. He directed special attention to the desirability of coming to some definite conclusion as to the employment or otherwise of photography on the occasion. In the discussion which followed Prof. Fœrster announced that the German Commission had resolved not to employ photography in 1882, and Mr. E. J. Stone, the Radcliffe Observer, directing astronomer of the British Commission, which he represented at the Conference, mentioned that it was not seriously intended to introduce photography in the expeditions of 1882, remarking that the French results from this method were not encouraging, and the American results had not been published in time to allow of due discussion before the British Commission was called upon to advise the Government on the best methods of observing the transit.

M. d'Abbadie, however, reminded the Conference that good results had been obtained by Mr. Todd from the American photographs. M. Hirsch said the scientific public had been surprised to find that after the lapse of seven years since the transit of 1874 there was yet but a partial publication of results, and these in small number: each nation had given its solar parallax, but could not a different method of procedure be adopted for the transit of 1882? It might be worth while to form a *bureau des calculs*, charged to collect, reduce, and discuss the whole of the observations in 1882, and the same bureau might also discuss the entire series of observations at the late transit, and publish the final value of the sun's parallax from the two transits. Prof. Fœrster took a similar view; Prof. Oudemans preferred that each commission should

in the first place draw up and publish its separate report; the definitive parallax would follow. At the second sitting of the Conference on October 6 M. Dumas notified the stations selected by the French Commission and the observers whom it was proposed to place in charge of the respective expeditions. At three of the stations, viz., Santa-Cruz, Rio Negro, and Port-Desire or Chubut, in Patagonia, M. Mansilla from the Argentine Republic, said the French expeditions might count upon the co-operation of his Government, and the same was stated as regards Santiago, another of the French stations, by Dr. Moesta on the part of the Government of Chile. M. Liais, delegate from Brazil, mentioned that M. Cruls would observe at Rio Janeiro, where the sun would be nearly in the zenith soon after the second contact; he had also organised a station in a locality situated at an altitude of 1800 metres to guard against unfavourable weather at Rio, and a third station would be at Pernambuco, where the chances of a clear sky are very great; further, M. Liais contemplated two additional stations, one of them in the Straits of Magellan; the telescopes employed in Brazil would be of 9 inches and 6 inches aperture. Prof. Fœrster stated that the German Government had not finally decided upon the precise localities to which the four authorised expeditions would be sent, but it had been proposed to place two of them in the southern part of the United States, one in the south of the Argentine Republic, and the fourth at the Falkland Islands. With regard to observations in the Straits of Magellan, M. Bouquet de la Grye, of the French Navy, said the Chilian Government had for a long time past instituted meteorological observations which, while they indicated that the probabilities of a fine sky were great at Santiago, were not promising for the Straits: "Il n'y a peut-être pas une probabilité de  $\frac{1}{2}$  de voir une partie seulement du phénomène." Prof. Fœrster stated that according to his information, there existed near the Magellan Straits very limited localities where the conditions would be favourable in December. With regard to the Antilles, to which expeditions were intended to be sent, the conditions, according to M. Bouquet de la Grye, were complicated: at Martinique they would be pretty good, as also for Florida; at Cuba moderately so; on the coasts of the Gulf of Mexico the chances of fine weather are small, though improving in the interior. M. Pechüle of Copenhagen said the Danish Government proposed, with the assent of the Chambers, to equip an expedition either to St. Croix or St. Thomas. Dr. Bakhuysen said, although the Netherlands Government had not made a final decision, it was proposed to send an expedition to Curacao or St. Martin in the Antilles, and a heliometer would form part of the equipment. M. Viegas, delegate from Portugal, remarking that the weather is usually magnificent in December in that country, mentioned that the observatories of Lisbon and Coimbra possessed large equatorial instruments, and suggested, if it were considered of utility, an expedition might be placed in the Portuguese colonies, at Benguela, for example. Mr. Stone reported upon the selection of stations by the English Commission, the principal centres being the Cape, Australia, New Zealand, and the Antilles. On the part of the Spanish Government, M. Pujazon, director of the Naval Observatory at San Fernando, said it was intended to organise two stations, one at Porto Rico, the other in the southern part of Cuba, where the chances of favourable weather will be considerable: equatorials of 6-inches (English) aperture to be supplied. At the same sitting of the Conference, M. Dumas proposed the nomination of two committees, the one to be charged with the distribution of the observing-stations, the other with the methods and instruments of observation; it had been previously pointed out by M. d'Abbadie that he was named to conduct an expedition to Cuba on the part of the French Government, where it was now